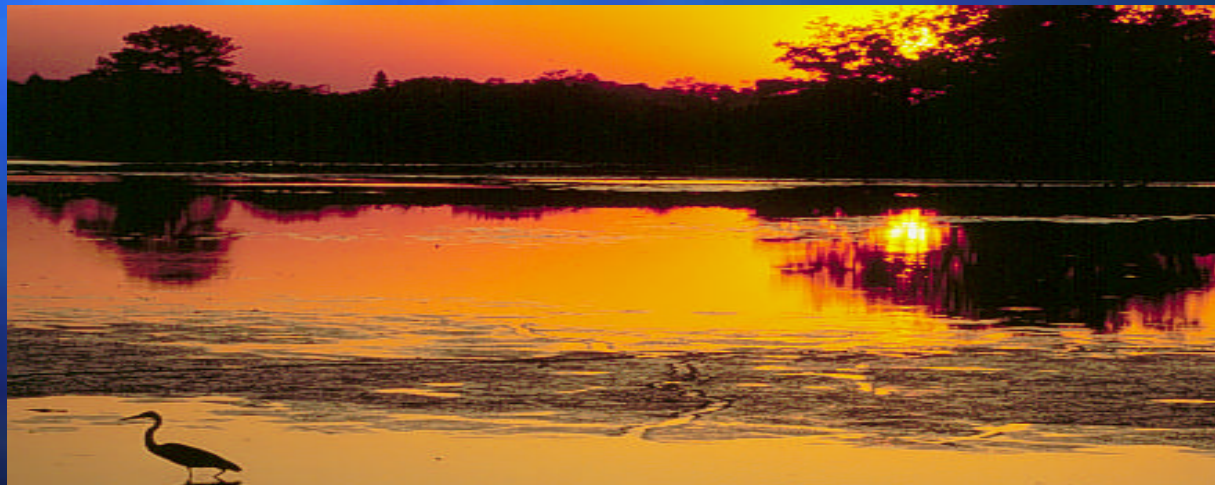


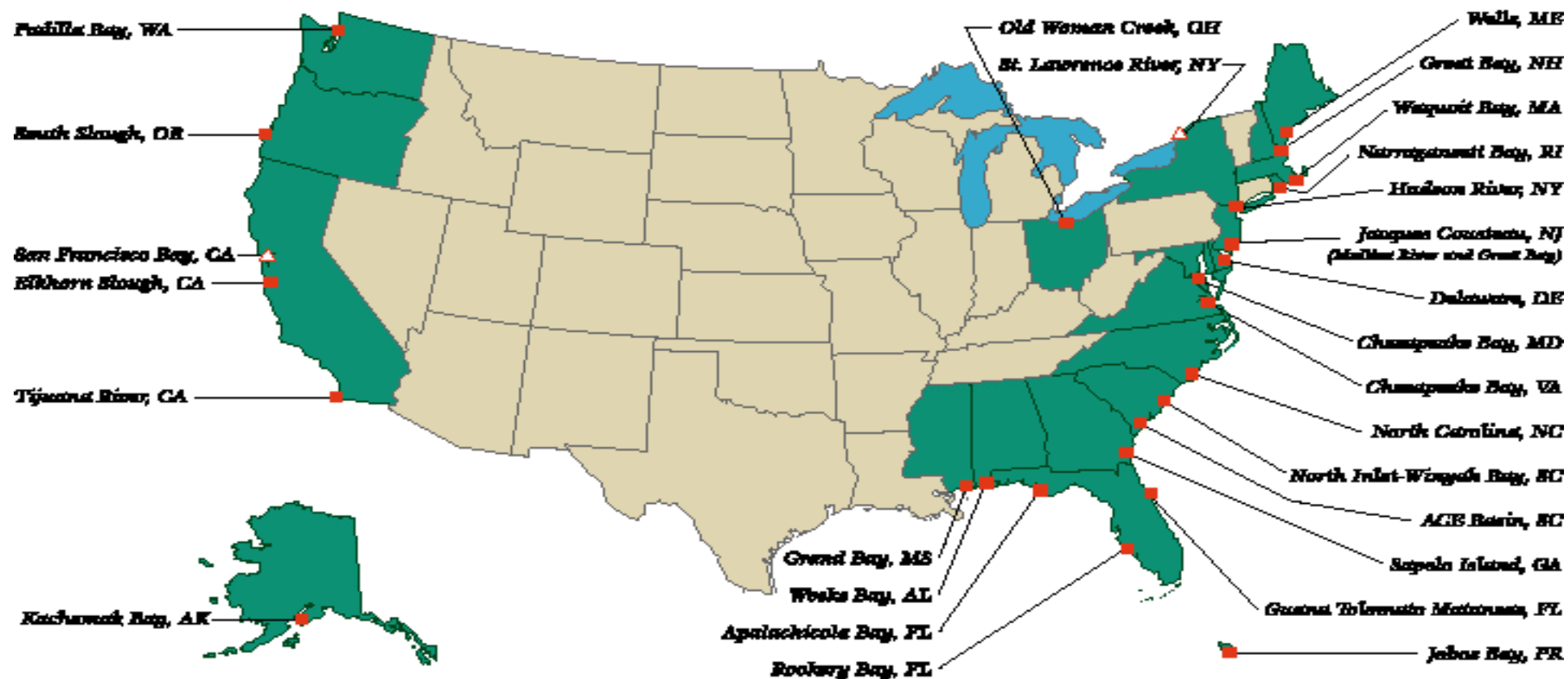
National Estuarine Research Reserve

System-wide Monitoring Program (SWMP)



National Estuarine Research Reserve System

designated ■
proposed △



August 1998

Research Platforms

- Study natural and anthropogenically-induced change in estuarine ecosystem ecology.
- Long-term scientific program to address fundamental coastal management issues.
- Transfer knowledge to relevant users.

NERRS Management Issues

- *Assessment Tools*
- *Atmospheric Deposition*
- *Boating Impacts*
- *Barrier Beach Dynamics*
- *Buffer Strips*
- *Contaminants*
- *Ecosystem Health*
- *Ecotourism*
- *Fish Habitat*
- *Global warming/sea level rise*
- *Ground water contamination*
- *Habitat assessment*
- *Habitat quality*
- *Habitat restoration*
- *Hypoxia*
- *Impoundments*
- *Improved environmental data*
- *Increased Development*
- *Invasive Species*
- *Land-use changes*
- *Non-point source pollution*
- *Nutrients*
- *Prioritize resource threats*
- *Relaxation of environmental regulations*
- *Sediment processes*
- *Sustainable use*
- *Water diversion*
- *Water quality*

Reserve Monitoring

■ *Then*

- Historically has varied in purpose, scope and intensity
- Collect data for site characterization

■ *Now*

- Develop a research and monitoring capability that addresses management questions
- Enhance ecosystem assessment
- Develop an integrated comprehensive monitoring program
- Provide a strong information base for decision making

NERRS Monitoring Program

Monitoring Goal:

“To identify and track **short-term variability** and **long-term changes** in the integrity and biodiversity of representative estuarine ecosystems and coastal watersheds for the purpose of contributing to effective National, regional, and site specific coastal zone management.”

NERRS Monitoring Program

■ **Element 1 - Abiotic Monitoring**

- Water Quality
- Weather
- Pollution

■ **Element 2 - Ecological Monitoring**

- Habitat Change
- Biodiversity

■ **Element 3 - Land Use Patterns**

- Land Use & Development
- GIS

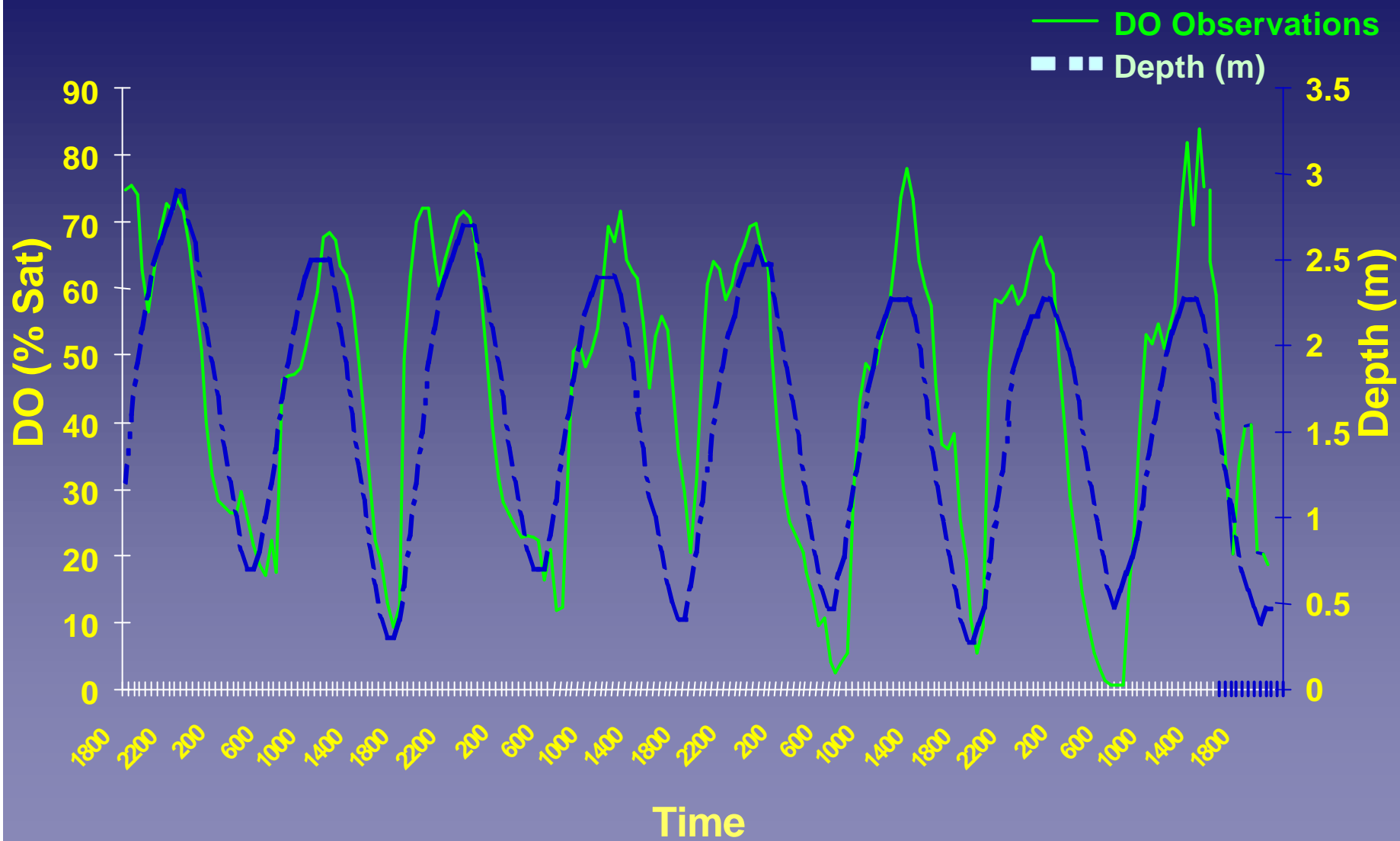
Element 1: Water Quality

Deploying 2-4 YSI 6000 Data Loggers at each Reserve to measure Water Quality.

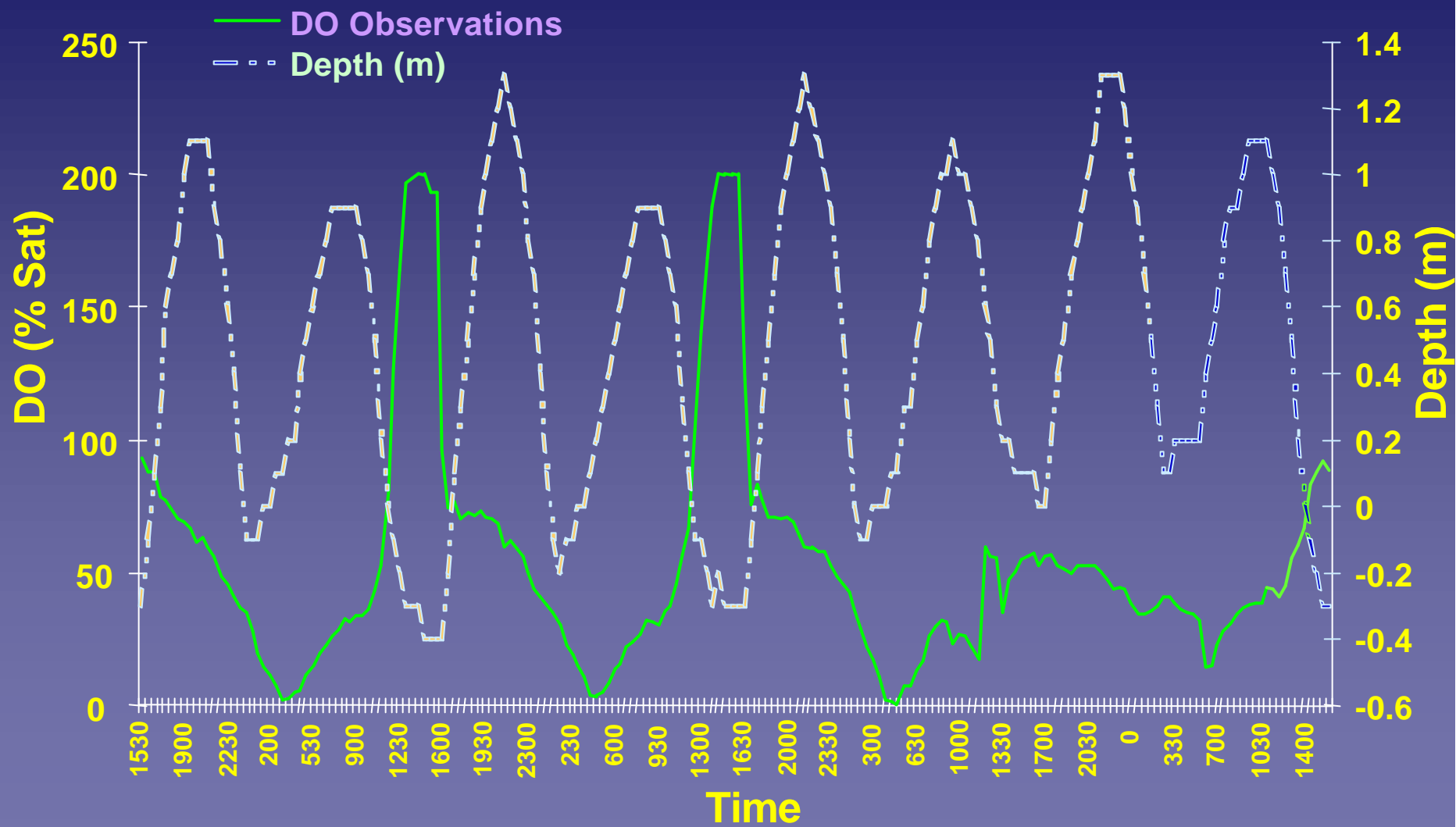
- *Temperature*
- *Conductivity
(Salinity)*
- *Dissolved Oxygen*
- *Turbidity*
- *pH*
- *Pressure (Depth)*



13 July - 17 July 1995



24 July - 28 July 1995



Element 1: Weather

*Weather Data collected at each Reserve
beginning in 2000.*

- *Wind Speed*
- *Wind Direction*
- *Air Temperature*
- *Relative Humidity*
- *Rainfall*
- *Barometric Pressure*
- *Photosynthetically
Active Radiation*

Centralized Data Management Office (CDMO)

- Mission: *To oversee the management, documentation, and publication of the NERRS monitoring data on the Internet.*
- Tasks:
 - QA/QC
 - *Establish data management strategies and protocols*
 - *Provide dial-up access to all Reserves*
 - *Provide Internet Access to SWMP Data*

Element 2: Ecological Monitoring

- *Ecological Monitoring Workshop (October 1999)*
- *Planning Phase - FY 2000*
- *YSI Fluorescence Probe Pilot (Chl. a)*
- *Habitat Mapping Pilot*

Element 3: Land Use Change

- *Linking Water Quality, Weather, and Ecological Monitoring to changes in Watershed Land Uses*
- *Currently Building Infrastructure in NERRS - PAGIS Project*

Protected Area GIS Project

To Date:

- *GIS Computer Platform with ArcView software for each Reserve*
- *ArcView Training for all Reserves*
- *Limited Staff Assistance*
- *Base Data layer Development*
- *Customized Data Products*

Data Layers

- *Boundary Layer*
- *USGS Digital Orthoquads*
- *Digital 7.5' Topographic Quads*
- *Political Boundaries*
- *Roads*
- *Hydrography*
- *Shoreline*
- *Watersheds*
- *NWI Wetlands*
- *Environmental Sensitivity Index*
- *Digital Ortho-photography*